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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Boon Ho

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EXAMINER

HAILE, FEBEN

ART UNIT

PAPER NUMBER

2616

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/717,521	Applicant(s) HO ET AL.	
	Examiner Feben M. Haile	Art Unit 2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-37 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-37 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>11/21/2003</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claims 6, 17, and 29 objected to because of the following informalities:

Regarding claim 6, there is insufficient antecedent basis for "the at least one address". This particular limitation was not introduced until claim 4.

Appropriate correction is required.

Regarding claim 17, there is insufficient antecedent basis for "the at least one address". This particular limitation was not introduced until claim 15.

Appropriate correction is required.

Regarding claim 29, there is insufficient antecedent basis for "the at least one address". This particular limitation was not introduced until claim 27.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 37 rejected under 35 U.S.C. 112, second paragraph, as being indefinite in that it fails to point out what is included or excluded by the claim language. This claim is an omnibus type claim. The phrase "can be" renders the claim vague because it is unclear whether the limitation(s) following the phrase are part of the claimed invention.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. Claims 24-37 rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. A "computer program" and "data structure" not claimed as embodied in a computer-readable medium are descriptive material per se and are not statutory because they are not capable of causing functional change in the computer. Such claimed algorithms do not define any structural and practical interrelationships with the other claimed aspects of the invention.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 3-6, 8-12, 14-17, 19-24, 26-29, 31-36 and rejected under 35 U.S.C. 103(a) as being unpatentable over Ofek et al. (US 2004/0083284), hereinafter referred to as Ofek, in view of Liu et al. (US 7,197,660), hereinafter referred to as Liu.

Regarding claims 1, 12, and 24, Ofek discloses discovering a topology object model of the routers (page 2 paragraph 0021; network topologies are determined and objects corresponding to elements in a domain are stored in a Topology

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Object Model); and displaying an indication of the detected condition (**page 2 paragraph 0021; a change in the status of an element is recorded in an associated entity object and the information contained in the Topology Object Model is graphically displayed**).

Ofek fails to explicitly suggest detecting a condition of the at least one backup router group based on at least one threshold value.

Liu teaches identifying a redundancy group, identifying a master device for the group, identifying primary and secondary backup(s) for the group, storing the designations and associated connections in a redundancy group table, receiving status information, and monitoring the group for failures (**column 8 lines 10-29**).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the recovery method taught by Liu into the system for providing data awareness disclosed by Ofek. The motivation for such a modification is the ability to respond quickly to failures without compromising throughput and interrupting service.

Regarding claims 3, 14, and 26, Liu discloses wherein the detecting is also based on a number of backup router groups to which one of the routers belongs (**column 8 lines 49-51; each device may act as a master in one redundancy group while simultaneously serving as a backup in another redundancy group**).

Regarding claims 4, 15, and 27, Ofek discloses at least one network router node (**page 2 paragraph 0021; topology of elements in a network**); at least one network interface for each at least one network router node (**page 2 paragraph 0023**;

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physical representation such as a network interface card); at least one address for each at least one network interface (figure 4; element IP address).

Ofek fails to explicitly suggest a state of each one of the at least one address that is internal to the backup router group; and any tracked interfaces associated with each one of the at least one address that is internal to the backup router.

Liu teaches identifying a redundancy group, identifying a master device for the group, identifying primary and secondary backup(s) for the group, storing the designations and associated connections in a redundancy group table, receiving status information, and monitoring the group for failures (**column 8 lines 10-29**).

Regarding claims 5, 16, and 28, Liu discloses a state of at least one of the at least one address that is external to the backup router group (**column 5 lines 11-16; detecting failures such link connectivity due to cable or port failures**).

Regarding claims 6, 17, and 29, Liu discloses wherein the detecting is also based on a state of at least one of the at least one address that is external to the backup router group (**column 5 lines 11-16; detecting failures such link connectivity due to cable or port failures**).

Regarding claims 9, 20, 23, and 32, Liu discloses receiving status information from the routers (**column 8 lines 20-29; the devices receive status information and monitor group for failures**); and updating the topology object model to reflect the received status information (**column 8 lines 39-43; the devices update their memory with a new configuration for the group**).

Regarding claims 10, 21, and 33, Liu discloses wherein the status information includes states associated with interface addresses within the at least one backup router group (**column 5 lines 17-25; detecting failures of devices within the group**).

Regarding claims 11, 22, and 34, Liu discloses wherein the status information includes status of tracked interfaces associated with routers organized in the at least one backup router group (**column 5 lines 17-25; detecting failures of devices within the group**).

Regarding claim 35, Ofek discloses at least one network node object representing an element in the network (**page 2 paragraph 0021; network topologies are determined and objects corresponding to elements in a domain are stored in a Topology Object Model**); at least one network interface object for each at least one network node object, the at least one network interface object representing an interface of the network element corresponding to the each at least one network node object (**page 2 paragraph 0023; the Topology Object Model include a physical element representation such as a network interface card**); an address object for each at least one network interface object, representing an address of the corresponding interface (**figure 4; the Topology Object Model include an elements IP address**).

Ofek fails to explicitly suggest a backup routing protocol group object representing network elements organized in a backup routing protocol group, the backup routing protocol group object including a virtual address of the backup routing protocol group and real addresses of the network elements in the backup routing protocol group; and an address state object for each of the real addresses of the

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network elements in the backup routing protocol group, including a state of the corresponding address.

Liu teaches a redundancy group incorporating a virtual configuration comprising one physical device acting as a master of the group wherein the virtual interface is bound to the physical interface of the master and if the master device fails the virtual interface is binded to a back up physical device (**column 8 line 45-column 9 line 9**).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the recovery method taught by Liu into the system for providing data awareness disclosed by Ofek. The motivation for such a modification is the ability to respond quickly to failures without compromising throughput and interrupting service.

Regarding claim 36, Liu discloses a track interface object corresponding to a tracked network interface of a first network element in the backup routing protocol group wherein the tracked network interface is located between the first network element and a network element outside the backup routing protocol group (**column 5 lines 11-16; detecting failures such link connectivity due to cable or port failures**).

5. Claims 2, 7, 13, 18, 25, and 30 rejected under 35 U.S.C. 103(a) as being unpatentable over Ofek et al. (US 2004/0083284), hereinafter referred to as Ofek, in view of Liu et al. (US 7,197,660), hereinafter referred to as Liu, in view of Yip et al. (US 6,954,436), hereinafter referred to as Yip.

Regarding claims 2, 13, and 25, Ofek as modified by Liu disclose the limitations of the base claims.

However, Ofek, Liu, and/or their combination fail to explicitly suggest wherein the at least one threshold value includes a minimum number of available routers in a backup router group.

Yip teaches a method for using a standby router protocol to determine the routers position as master or slave according to parameters such as a metric of active routes (**column 2 lines 11-25**).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate method of using tracking to select redundant routers taught by Yip into the system for providing data awareness disclosed by Ofek as modified by the recovery method suggested by Liu. The motivation for such a modification is avoiding erroneously selection of a router that cannot communicate.

Regarding claims 7, 18, and 30, Ofek as modified by Liu disclose the limitations of the base claims.

However, Ofek, Liu, and/or their combination fail to explicitly suggest wherein the condition is a minimum number of functional routers available in a corresponding backup router group.

Yip teaches a method for using a standby router protocol to determine the routers position as master or slave according to parameters such as a metric of the state of the functionality of the router (**column 2 lines 11-25**).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate method of using tracking to select redundant routers taught by Yip into the system for providing data awareness disclosed by Ofek as modified by the recovery method suggested by Liu. The motivation for such a modification is avoiding erroneously selection of a router that cannot communicate.

Regarding claims 8, 19, and 31, Ofek as modified by Liu disclose the limitations of the base claims.

Yip teaches a method for using a standby router protocol to determine the routers position as master or slave according to parameters such as a metric of the state of the functionality of the router (**column 2 lines 11-25**).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate method of using tracking to select redundant routers taught by Yip into the system for providing data awareness disclosed by Ofek as modified by the recovery method suggested by Liu. The motivation for such a modification is avoiding erroneously selection of a router that cannot communicate.

Conclusion

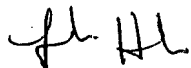
6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

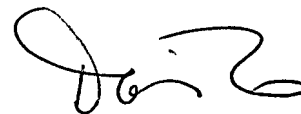
a) Ho et al. (20050265346), Router and Routing Protocol Redundancy: A network device such as router includes a redundancy platform having an active controller system and a standby controller system. A routing protocol state change is received or generated by the active controller system. The received or generated routing protocol state change is replicated to the standby controller system. Thus service outage or degradation is reduced and service availability is increased.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Feben M. Haile whose telephone number is (571) 272-3072. The examiner can normally be reached on 6:00am - 3:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Doris To can be reached on (571) 272-7629. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


06/05/2007



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